

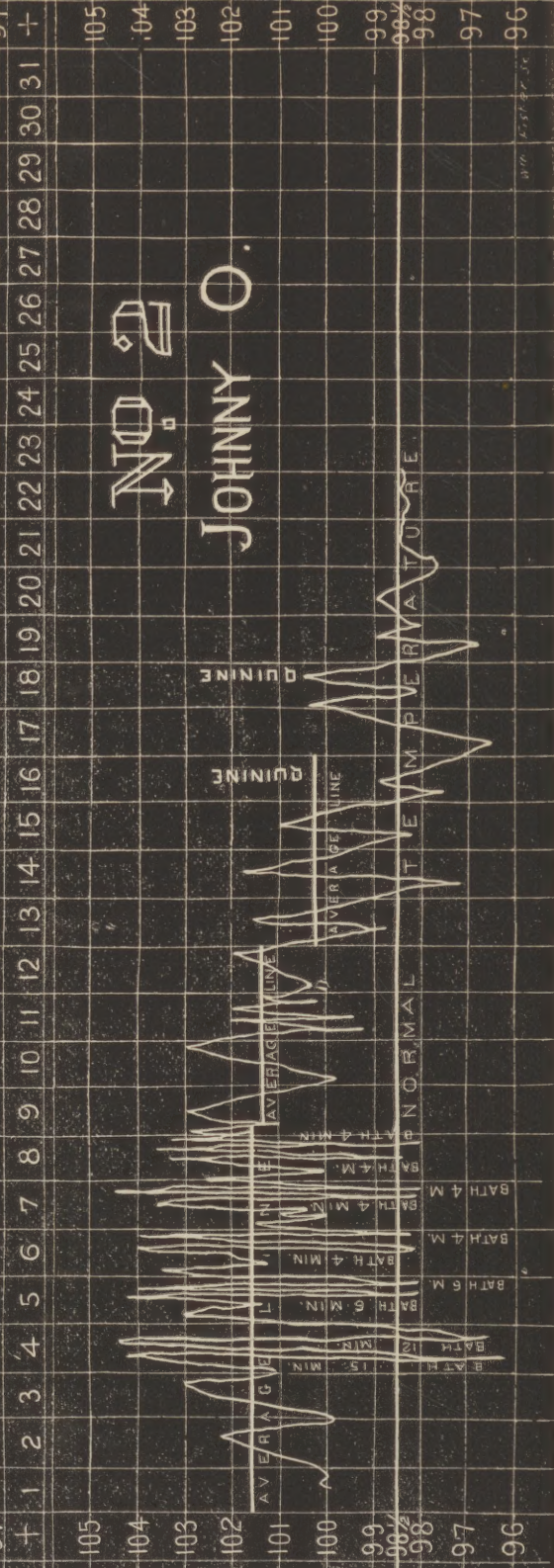
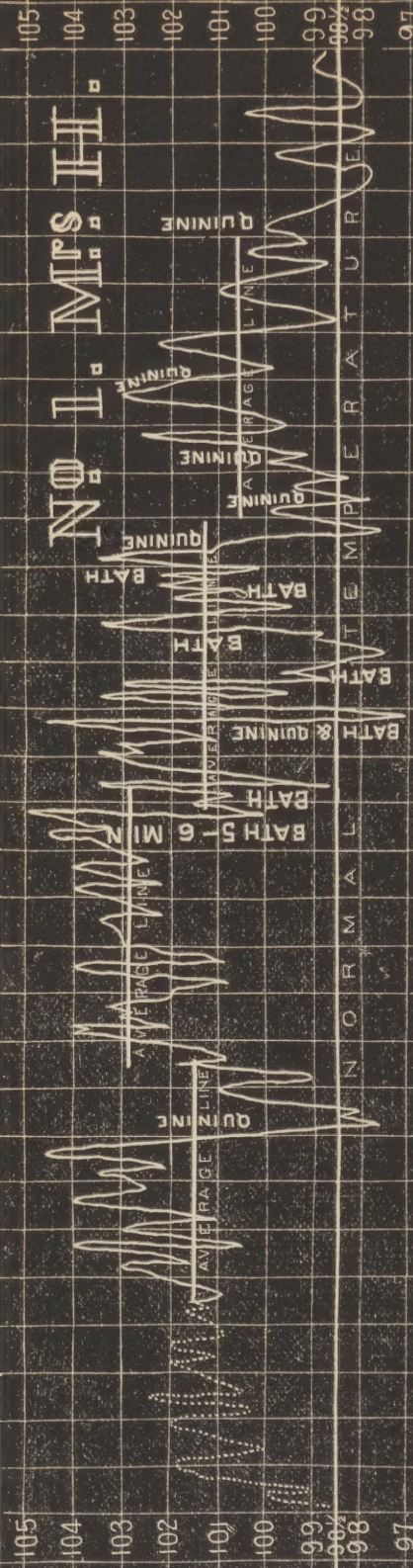
Thomas (J. G.)

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USE OF BATHS
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BY J. G. THOMAS, M. D.,
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In the Philadelphia Medical Times of September 11th, 1875, appeared a short article which I wrote on the use of baths in the "summer complaint" of children. What is there written was based on the treatment of quite a number of cases of this disease, of the type usually termed entero-colitis, and which is commonly accompanied with a good deal of fever, sometimes rising as high as 105°. Having found other plans of treatment so unsatisfactory, I felt literally driven to try anything which gave promise of better success. After learning the best methods of using the baths, the proper temperatures, etc., the treatment gave me great comfort, and I went to my little patients with the confidence that I could save a larger number of their lives, and could do it in a much more satisfactory way, than by the usual dosing of nauseous drugs into already sick and dreadfully offended stomachs.

The happy experience of the use of the baths in this disease, doubtless had something to do towards influencing me to make trial of the same means in typhoid fever, besides what I had read upon the subject in the current literature of the day. During this last winter, we have had many more than the usual number of cases of this disease in our city, and I have applied the plunge-bath in twelve cases; and it is of them I propose to speak in this brief communication.

To place a person burning up with the fever in a cold bath would appear to be the most rational procedure. Water is an element that is so abundant all around us, and its property of extracting heat from any object so well understood, that it ap-

appears to me as singular that we have not used it more in subduing the intensity of fevers. It has been used of course more or less for centuries, but generally by those who were considered charlatans in the profession, and therefore unworthy of confidence, and they were governed in its use by no settled principles of philosophy. I repeat, that when I fully realize what baths have done for some of my patients, it appears strange that I have not tried them before; and especially when the conviction comes over me that may be some of them have been burnt up by the parching effects of fever. The effects of an intense fever upon the cells of the various tissues, especially the brain and the globules of the blood, are now being studied microscopically, and when they are fully understood will doubtless prove an important lesson to the medical profession. Not until the thermometer began to be generally used, did we have a faint conception of the importance the heat of the body holds as a symptom, both in diagnosis and in prognosis, and in furnishing indications for treatment. What the study of the correlation of the forces of the human system may develop, remains to be seen; but one thing is evident to the practitioner, and that is, that it is one of the most important symptoms which enters into the element of a large number of diseases. Therefore, I think the thermometer must be considered one of the most important instruments which has been introduced into the practice for the last few years; and it would appear strange that its value was not appreciated long before. It is, of course, much more important in some diseases than in others; in fact there are maladies that, as far as we know, the heat observations are negative in value, whilst there are many where they furnish us surer indications than any other symptoms. This being the case, how important it is to try every instrument that promises to afford any light to us in diagnosis or relief to our patients; and we should try them in the spirit of candor, which made Biot say: "We must not shun the humblest contrivances, when they can improve or supplement the medical senses." Is it worth while to add that we should not shun the humblest and commonest element around us, if it promises even comfort to those who are entrusted to our care when they are sick?

It must have been observed by those who have studied the thermometry of disease at all closely, that a temperature of 105° will soon end the life of any patient with any disease. We all know that the heat can go much higher than this, and descend in a short time, and but little harm be done; but if it remains for a few days at this height, it portends the most imminent danger to life. In quite a number of diseases, and typhoid fever is one, the gravity of the case can be estimated by the height of the fever. Of course we know there are certain accidents which may occur suddenly in this disease, which will not be always foreshadowed by the temperature; but generally, and in a very

large proportion of the cases, it will warn us more reliably than any other indication which we can have with our present light, and for a greater length of time beforehand.

In the use of water to subdue the heat of typhoid fever, I tried the three most common forms of its application, viz: sponging, the wet-pack, and the plunge-bath. In the mild cases, where the fever did not rise above 102° , I used the sponging entirely. In such cases, it is very desirable and affords great relief, and if it is sedulously practiced will moderate the fever very appreciably. The wet-pack I used in the usual way of wrapping the patient in sheets wrung out of cold water, (sometimes iced,) and then packing dry blankets around them. This I found more effectual in reducing temperature than sponging; and I think it is applicable to those cases where the temperature ranges above 102° , but seldom reaches $103\frac{1}{2}^{\circ}$ or 104° . A few patients with a temperature above 104° told me they preferred the pack to the bath. But this may have been owing to the ease and readiness with which it could be used. There are so few houses that are prepared with the apparatus proper for giving the plunge-bath with convenience, and the act of getting everything in readiness, and the fatigue of lifting the patient from the bed to the bath and back again, makes some of them nervous, and they prefer to have the wet sheet applied, and the blankets wrapped around them, and then to be let alone. But if the temperature is 105° , or above, with very little let up to this intensity of degree, the plunge-bath is the only means by which we can be certain of controlling it. Many of the difficulties in giving plunge-baths to the sick may be overcome by having bath-tubs constructed in the lightest sort of way, so as to move them with ease from one room to another. If time proves the value of this form of treatment, few houses in cities, especially those blessed with water-works, will be without ready means for the application of baths in sickness.

As we are studying the effect of baths upon typhoid fever, and do not propose to go into all the details of the malady, only so far as to illustrate the influence water may have upon its course and termination, I have here selected two charts which represent in profile the heat lines of two cases of the disease which were subjected to this treatment. They represent twelve other cases which were treated by the plunge-bath.* There was some little difference in the types of the two cases which are often to be observed. The first chart is of the case of Mrs. H., a young woman of twenty-five years; married, and the mother of two children—the youngest, six months. Not at all nervous in disposition, always had good health, and easy times in her confinements. Before attacked with fever, she was in robust health, having spent the summer in the mountains. When the fever

*SEE CHART.

came on she was somewhat worn down by the fatigue of nursing her youngest child, which had been very ill with dysentery. She had come down to the coast after the first frost, and as she was living in a malarial locality, I thought, for the first few days, that perhaps her case was of the remittent type, and, therefore, the temperature, although taken regularly, was not written down, and hence, not considering that portion very accurate, have marked it with a *dotted* line. After this it was written down at the time the heat was taken. The exact beginning of the fever I could not fully determine, and she was uncertain, as it had come on so very gradually. But, on what was supposed to be the sixth day, the temperature was 103° , and it went up in the afternoon to 104° . I ordered forty grains of quinine in five-grain doses, to be taken after midnight, at intervals of one hour, which brought the fever down to 101° in the morning; but by the afternoon it was as high as the day before, with decided increase of the nervous symptoms.

About the same status was maintained for two days, during which time sponging was kept up. On the eighth day, the fever being higher, and but little relief from sponging, I determined upon larger doses of quinine. By examining the chart a very considerable dip will be observed upon the ninth day, which was produced by eighty grains of quinine in twenty-grain doses. Here I thought the disease was scotched. These large doses of quinine did not make her nervous, not as much so as the smaller portions, but she was very deaf under them. The temperature was down pretty much all the next day, and gradually rose as the effect of the medicine passed off. In two days, the fever was as high as it had been at all, and during the week, which was the second of the disease, it ranged in the evenings above 104° , and respited very little in the mornings.

This continued high fever was telling fearfully upon her nervous system, which was evidenced by the increasing delirium and restlessness, which was controlled very little, and then only temporarily by chloral hydrate and bromid. potass. By reference to the chart, it will be seen that the first bath was given at this stage, which was the fifteenth day, and when the fever was 105° , with an upward tendency. A tub, long enough to submerge the entire person at full length, was placed by the bedside, and water put in of the temperature of 85° , leaving room for colder water to be introduced to reduce the temperature of the bath. A thermometer was put on the side of the tub, and an ordinary clinical thermometer in her mouth just as she touched the water. Her temperature, as is often the case, rose for five minutes, and then began to fall; and at the end of fifty-six minutes it was 99° . I had gradually introduced colder water into the bath until it was 75° .

She was taken out and placed in bed, with woollen blankets wrapped closely around her. The effect of this bath was to

completely quiet the restlessness, and her delirium disappeared, and she was made comfortable for some hours. The heat rose a little that night, but not enough to prevent a good night's rest, which she had not had before for ten days. On the next day, the heat being up to 104° , I gave another bath; but this time it only required sixteen minutes to reduce her temperature to a little below normal. From this time, I felt that I could control the fever, a confidence which any one will have after its use under the same circumstances. I gave her the last bath on the twenty-first day; after this, although the fever lasted for ten days longer, yet she was comparatively comfortable, and the heat showed no disposition to go higher than $102\frac{1}{2}^{\circ}$ to 103° . The treatment after this was occasional doses of quinia, and sponging the body with bay rum. She had loose bowels, with ochral discharges, tympanites, and tenderness over the ileo-cæcal valve, all of which was treated with warm applications to the abdomen, and now and then a bismuth powder, to diminish the number of actions, etc. In this case, I beg to call especial attention to the *average* line of heat of the week, which preceded the first bath, and then to the average line of the week in which they were used. It will be seen that in the week preceding the baths, it was 103° , whereas in the week of their use it was 101° . It may be said that in the second week of typhoid fever the temperature is always higher than in the third. This, I think, is true in the majority of cases, but not always; *per contra*, it has been observed, that if the fever is allowed to run on, uncontrolled, that it is higher in the third; and this is uniformly the case in those which result fatally in the third and fourth weeks. My judgment at the time was that this would have been the case in this instance; and, in addition, that there was strong evidence for the belief that her constitution would have succumbed to the influence of the fever. This opinion is corroborated by the result of other cases. Besides, I have taken cases in the first week, and by the baths, made the average line lower than it would otherwise have been.

The second chart represents the case of Johnny O. This was a boy eleven years of age. He was rather under size, and delicate in frame, though he had always been healthy. I do not consider that the thermometrical record in this case was reliable up to the administration of the first bath, which was on the fourth day of the fever. Up to this time, the thermometer was used, but the record was not written down; but after this, every observation was accurately kept, the instrument being used every hour in the day and night. The first bath was given this boy on the fourth day, when the temperature was a little the rise of 104° . A light tin tub, long enough to stretch him out full length, was used. Water, the temperature of 80° , to commence with, having everything ready to reduce it as low as necessary. He was excessively nervous and restless, starting in

his sleep, with indications of delirium. His skin was pungently hot to the touch. Quinia had been freely used from the beginning, with the effect of increasing the nervousness, and elevating the temperature. In the first bath, it took fifteen minutes to reduce the heat to 99°, and it continued to descend until it reached 96°, after he was wrapped up warmly in bed. But after the administration of a weak toddy, it did not stay at this low figure very long, for in three or four hours the heat of his body was as high as ever. The fever in this case was, so to speak, as elastic as an india rubber ball, bounding up as fast as it was put down. But the manifest comfort the little fellow derived from them must have been witnessed before they can be fully realized. I gave him, as will be seen by the chart, two baths a day after they were begun, up to and including the eighth day, making, in all, ten baths. After this, the brunt of the disease appeared to be broken, and sponging answered every purpose to moderate the heat. From the eighth day the temperature steadily declined, and by the twenty-first day of the disease he was convalescent. After the first bath, six minutes was the longest time he was kept in the water, and generally four sufficed. Besides, the temperature of the baths, after the first three, was 90° to 85°, and very little reduction made. This case illustrated perfectly the ease and facility of extracting heat from a child's body in fever.

These two cases fairly represent the twelve cases treated by the plunge-bath. In all of them very little medicine was given. Quinia was several times given in the beginning, and in all of them it was administered as a tonic as the heat declined, and sometimes to give a finishing stroke to the disease in its last stage. In one or two cases I tried the heroic doses. My cases, I am convinced, terminated earlier than they would have done otherwise, some a week, others two weeks. I saw one case this season which had been treated in the usual way, and which ran on to the eighth week. But whether this treatment cuts the disease short may be a matter of doubt with some; but of one thing there can be no doubt, and that is, that the sufferings of the patients are greatly alleviated, and also, that they get up looking infinitely better than by any other known treatment. The loss of flesh is very much less, and, of course, this is easy enough to comprehend. The fire is kept lower, and the consumption of fuel is less.

There was some difference in the types of the two cases which we have endeavored here to represent, and it may be as well to mention them, and which I think is very often to be observed in this disease. One of them, to the touch, did not feel very hot, and the pulse was not very frequent. In the other, the skin was pungently hot to the hand, and the pulse was very rapid. In both, there was a tendency to delirium when the fever was allowed to run high, which was invariably relieved by the baths. In one, the temperature generally rested exactly where it was

when the patient was lifted out of the water; in the other, it would go down two or three degrees, and one time as many as four, after the patient was snugly in the blankets. In the latter case, the rebound of the fever was almost immediate, yet he would sleep quietly until the fever had been up for some hours. In the little boy's case the tongue was bright red with shiny streaks down the centre, and it was sharp at the tip. In the other, which I think was owing in some degree to the stage in which the baths were given, the fever would not ascend so quickly, and often several hours would elapse before it had attained its full height. Her tongue was broad and spongy, yet dry, and she seemed to have but little use of it. The countenance of one was dusky and dull; of the other, wakeful, with a tendency to a more active delirium. In this connection, I may remark that I never had two cases of any disease nursed with greater care and intelligence; and the thermometric observations upon which the profile lines in the charts were drawn, were taken every hour in the day and night.

In conclusion, I will say that my belief is that this treatment should not be undertaken except under the intelligent guidance of the thermometer; but with this instrument, and a proper comprehension of what it indicates, there can be no danger. If a self-registering thermometer is being used for the mouth, it should be taken out every minute, or less, and the register knocked down so as to be certain we get the correct temperature, and to follow it as it descends under the influence of the water. The mouth is the only place suitable to use the thermometer in this practice, and it should be kept in its place all the while, except when it is taken out to force the register down. There should be an ordinary thermometer to take the temperature of the bath; and with regard to the degree to commence with, I think in the majority of cases, it had better be low enough to make a decided impression at once. Some patients may be nervous at first about the cold, but they will soon get over this when they find how much more comfortable they are made afterwards. Such as feel timid about cold water had better be first put into a tepid bath, and its temperature gradually reduced. But to do this it will be found much more time will be consumed in reducing the heat of the patient to the degree you want it, and with the little conveniences usually had, and the liability of the patient getting a little nervous under the length of time they are kept in the water, makes it altogether desirable to begin with the temperature of water at or below 80°. I had one or two patients that did not want to come out of the water when it was time that they should, and were always ready to return to it. Most of them, with a temperature of 105°, will become fond of it. In both of these charts it will be observed that as the fever declined the temperature was constantly liable to be below the standard of health. I observed this throughout the convalescence of a num-

ber of cases of this disease, and that their recovery was much hastened, and their strength more rapidly restored by watching these short depressions in the temperature, and plying the stimulants while the heat was low.

The depressions and slight elevations of temperature which occur in the convalescence are doubtless owing to some fault in the nervous system which seems to regulate the heat-producing power of the human body. There can be no doubt, I think, but that typhoid fever has two exacerbations in the twenty-four hours.

